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### **Citation**

Waal, W. J. I. (2021). Distorted Reflections? Writing in the Late Bronze Age Aegean in the Mirror of Anatolia. In M. Bianconi (Ed.), *Culture and History of the Ancient Near East* (pp. 197-232). Leiden/Boston: Brill. doi:10.1163/9789004461598\_011

Version: Publisher's Version

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**Note:** To cite this publication please use the final published version (if applicable).

# Distorted Reflections? Writing in the Late Bronze Aegean in the Mirror of Anatolia

*Willemijn Waal, with Addendum by Martien Dillo*

## 1 Introduction

When comparing the surviving textual sources from the Late Bronze Age Aegean and Anatolia, one is immediately struck by the great difference between these two corpora. The Hittite tablet collections have yielded large, elaborate clay tablets containing a wide range of text genres. These include ritual and festival protocols, oracle reports, hymns, prayers, (international) correspondence, literary texts, lexical lists, but hardly any daily administrative and economic records. By contrast, the Linear B archives consist solely of such administrative and economic records, and none of the above-mentioned text genres which are so amply represented in Anatolia have been found in the Aegean.

Considering the close proximity of these two areas and the fact that they were in regular contact, this difference is intriguing and deserves a closer investigation. Does it reflect a true difference in the use of writing or is it merely a perceived difference because we are dealing with incomplete data on both sides? This question is closely tied to the question to what extent perishable materials was used for writing in the Aegean and Anatolia, which is a controversial topic. This paper aims to add an Anatolian perspective to the long-standing debate about the extent of the use of Linear B writing in the Aegean.

## 2 Anatolia and the Aegean: Areas in Contact

Though the Aegean and Anatolia are often treated and studied as separate entities, the former regarded to belong to the ‘west’ and the latter to the ‘east’, in antiquity intensive contacts between these two regions existed. Fortunately, these connections are being more and more acknowledged and the last decades have welcomed several initiatives (including the present volume) for interdisciplinary approaches to the study of the Aegean and Anatolia, as well as the rest of the ancient Near East.<sup>1</sup>

1 See, e.g. the pioneering works of Burkert 1984 (1992); West 1997 and more recently, e.g., Collins—Bachvarova—Rutherford 2008; Haubold 2013; Bachvarova 2016.

Archaeological evidence shows that contacts between the two regions existed from at least the Neolithic period onwards. The most eloquent demonstration hereof are probably the clay stamps, or *pintaderas* as they are often called. Clay stamps from Neolithic sites in Central Europe, the Balkans, northern Greece, and Anatolia as well as seals and stamps from Early Bronze Age sites in the Aegean, Anatolia, and the Near East show some striking similarities. They share the same motifs and designs (notably zig-zags, spirals, and concentric circles) and shapes, such as the foot-shaped amulets that are found in all regions (Makkay 1984; Younger 1987 [revised 2009]; Skeates 2007).

Contacts continued in the Middle Bronze Age, and are especially well attested for the Late Bronze Age, the period which is the focus of this research. Archaeological evidence shows that there were well-established relations between the Aegean and western Anatolia (see e.g., Beckman e.a. 2011: 267–268, Cline 2014: 70–72, Niemeier 2008). Archaeological confirmation for contacts between the Aegean and central Anatolia is less evident, but not absent: there are incidental finds of Mycenaean objects in the Hittite capital Ḫattuša/Boğazköy and of Hittite objects in the Aegean.<sup>2</sup> Further, the painted plaster remains discovered in Ḫattuša show links to Mycenaean paintings with respect to their iconography as well as the techniques used (Brysbaert 2008: 102; Müller-Karpe 2003: 392–393). Thaler (2007) has pointed out the architectural parallels between Hattuša and Mycenae, and Blackwell (2014) has convincingly argued that the Lion Gate of Mycenae was probably made by Hittite tools and techniques. This all implies the exchange of knowledge and experts.

The most overwhelming evidence for contact, however, comes from the clay tablets found in Ḫattuša. Some 30 texts mention the Aḫḫiyawa, which are to be identified with the Mycenaean Greeks (see recently Beckman e.a. 2011). The texts confirm the Mycenaean presence in West Anatolia and reveal that diplomatic contacts between the Hittite king and the king of Aḫḫiyawa existed. This king of Aḫḫiyawa, whose name is not preserved, is called ‘Great King’ by the Hittite king, a title which was reserved for the rulers of the great powers of that time.

2 The fact that there are only relatively few examples is not alarming, as there is a general dearth of Hittite objects outside of Anatolia, as well as foreign imports in Ḫattuša (e.g. Genz 2010; Kozal 2017). It is, however, clear from textual evidence that there were regular diplomatic contacts and exchanges of goods with Egypt and Mesopotamia, so the scarcity of the archaeological evidence should not be seen as evidence that contacts were limited or non-existent. Also, the almost complete absence of Mycenaean pottery in central Anatolia does not necessarily reflect Hittite restrictions on Aegean import as is often assumed (see, e.g., Cline 1994: 71–74; Bachhuber 2006: 355).

### 2.1 *Political Organization*

The title of 'Great King' being used for the king of Aḫḫiyawa brings us to the hotly debated issue of the political organization of Mycenaean Greece.<sup>3</sup> The figure of a Great King is hard to reconcile with the conventional view in which the Mycenaean world was made up of several independent kingdoms. This view has been challenged by Kelder (2004/5, 2008, 2010) who has strongly argued for a united Mycenaean kingdom ruled by a Great King (*wanax*), presenting a range of arguments. Apart from the above-mentioned textual evidence from Ḫattuša, he sees the striking cultural uniformity, the uniformity of the palatial administrations and the large-scale infrastructure projects in Mycenaean Greece as evidence for a central overarching authority. Though still not generally accepted, this view seems to be gaining steam, see e.g. Eder—Jung (2015),<sup>4</sup> Bányai (2019), Waal (2019a) who also present arguments for a unified Mycenaean kingdom ruled by a *wanax*. Beckman et al. (2011: 4–6) suggest a slightly different scenario, in which Aḫḫiyawa is to be understood as a confederation of Mycenaean kingdoms. Dickinson (2019) prefers a scenario of independent city states, conceding that the Mycenaean kingdom may 'have had a circle of allies, some perhaps more like vassals but still technically independent, very much as in the Hittite Empire' (p. 42). Indeed, if some form of overarching Mycenaean authority existed, the situation in the Aegean would have been comparable to the political organization of Anatolia in the Late Bronze Age. The Hittite Empire has been aptly described as a network of vassal states. These vassal states were controlled by a (usually local) ruler, who was bound to the Hittite king by means of a treaty in which the vassal's obligations, duties and benefits were stipulated (see, e.g., Bryce 2005: 48–49). The surviving treaties show that the vassal kings enjoyed some level of freedom with respect to local, internal affairs, but they were not allowed to have their own foreign policy; all relations with other states were in principle controlled by the Great King in Ḫattuša.

3 For a most recent discussion, see now Kelder—Waal (2019).

4 It is surprising that Eder and Jung do not refer at all to Kelder throughout their article, though they use a number of the same arguments that he has put forward. They conclude with a curious 'note on Kelder', in which they—incorrectly—state that Kelder did not consider Crete to be part of the Mycenaean Kingdom, ignoring all the other contributions he has made to this discussion.

### 3 Writing in Anatolia

#### 3.1 *Hittite Cuneiform Writing*

One of the two writing systems that were in use in Hittite Anatolia (ca. 1650–1180 BCE) was the cuneiform script. It is generally held that this script was taken over from Syria in the 17th century BCE and remained in use till the end of the Hittite Empire around ca. 1180 BCE. Altogether, some 30.000 clay tablets and (mostly) fragments have been found on several locations in central Anatolia, the majority stemming from Ḫattuša/Boğazköy.

The texts are predominantly written in the Hittite language and belong to the palace or state administration, no texts in clearly private contexts have been found.<sup>5</sup> As mentioned above, the tablets include religious, scholarly, historical, mythological and literary texts, but little day-to-day administrative and economic documentation (see also below § 5).

The tablets are not dated, but on the basis of their palaeographic and linguistic characteristics a rough distinction between Old Hittite (1650–1500 BCE), Middle Hittite (1500–1350 BCE) and Late Hittite (1350–1180 BCE) may be made.<sup>6</sup> The overwhelming majority of the texts stems from the Late Hittite Period.

The corpus can be divided into 4 broad categories: temporary or disposable records, semi-current records, permanent records and charters.<sup>7</sup> The temporary tablets are a relatively modest group, which includes letters, oracle reports, depositions and economic-administrative records. They are generally small tablets, which are sometimes hastily written. These tablets were not copied as separate documents, but they were discarded after a certain period of time and/or incorporated into larger summaries. The semi-current records are larger, more-columned tablets that mainly include such summaries and inventories based on smaller, ephemeral records. By far the largest group are the so-called permanent records, including festival and ritual protocols, literary compositions, annals etc. These texts were copied over the centuries and existed in multiple copies. A singular category are the charters, which represent original sealed documents. This is a limited collection, which predominantly consists of land deeds from the Middle Hittite period that were kept on a special location.

5 For an overview of the nature and content of the Hittite cuneiform sources, see Van den Hout 2011. For a possible example of a private document see Wilhelm 2007.

6 Note that these dates and the dating criteria used have been the object of discussion in recent years. Van den Hout (2009a, 2009b) has made a case for a later date of the earliest texts.

7 See Waal 2015: 173–175. This division relies heavily on Van den Hout 2002.

Overall, the tablets in all tablet collections are very uniform and highly standardized. This does not only apply to their content, but also to the language, scribal conventions and diplomatic features (shape, size, layout etc.).<sup>8</sup> Apart from clay, metal could also serve as a writing material for cuneiform. Texts on clay inform us that important tablets could be executed in gold, silver, iron and bronze. In 1986 one such metal exemplar was discovered, a bronze tablet containing a treaty (Otten 1988).

The cuneiform script is almost exclusively attested on tablets. Exceptions are a few incidental inscriptions on an axe, a sword and a hay fork (Van den Hout 2011: 56 with references) and the legends of royal seals (see below 3.2).

### 3.2 *Anatolian Hieroglyphs*

The Anatolian Hieroglyphs are an indigenous writing system that was used for Luwian, a language closely related to Hittite that was in all likelihood spoken by the majority of the population.<sup>9</sup> Geographically, the hieroglyphic sources are more widely spread than the cuneiform script, ranging from northern Syria to the west coast of Anatolia. The origins of the scripts are debated, but they were in use as a writing system from at least the 15th century BCE onwards. The script continues to be in use after the fall of the Hittite Empire in Cilicia and Northern Syria till around the 7th century BCE.

In the Late Bronze Age, the Anatolian hieroglyphs are best known from seals, and mainly seal impressions. In Hattuša, several thousands of clay sealings with the impressions of seals of kings, queens, princes and officials have been discovered. On the seals, their names and titles may be written in hieroglyphs. Only on royal seals, the use of hieroglyphs in the centre is combined with the cuneiform script in the outer ring of the seals.

The majority of the sealings (over 80%) are so-called bullae, lumps of clay formed around a knot or a string, comparable to the hanging nodules found in the Aegean (see below § 3).<sup>10</sup> It is unclear whether or not these bullae were originally attached to written documents or to other goods and objects. The largest group of the bullae were found together with the above-mentioned sealed land deeds. It has therefore been suggested that the bullae were attached to official documents of a similar content, but now recorded on wooden writing boards instead of clay (Herbordt 2005: 36–39). However, other suggestions for their

8 See Weeden 2011: 383, Waal 2015, esp. pp. 122–124, 150. Note, however, that Gordin 2015: 344–345, 354 does distinguish different scribal traditions in Hattuša during the Late Empire Period.

9 See e.g. Van den Hout 2006.

10 For the terminology, see Herbordt 2005: 25.

use and function have also been made (Mora 2007; 2010: 95–97; Van den Hout 2012: 49–54). A smaller percentage of the sealings are direct sealings, which are assumed to have been attached to leather bags (Herbordt 2005: 34–35).<sup>11</sup>

Apart from seal impressions, the Anatolian Hieroglyphs were used for official royal rock inscriptions. The number of such inscriptions from the Late Bronze Age is limited, the majority of the inscribed stone reliefs stem from the period after the fall of the Hittite Empire. The first king known to have an inscription for public display executed in stone was king Muwatalli II (ca. 1295–1272 BCE), or possibly Šuppiluliuma I (ca. 1350–1322 BCE).<sup>12</sup> In addition, there are occasional examples of hieroglyphic graffiti and a few hieroglyphic inscriptions on metal objects, such as cups, bowls and weapons, and one badly damaged and uncertain example of an inscription on lead.<sup>13</sup>

From the succeeding Iron Age, several lead strips have survived, containing economic and private documents.<sup>14</sup> Due to these fortunate discoveries we know that Anatolian Hieroglyphs were also used for economic-administrative and private documents in the first millennium BCE. Opinions differ about the extent to which they were also used for such purposes in the Hittite period, a problem which is inevitably tied to the disputed and elusive wooden writing boards (see below).

### 3.3 *Writing on Perishable Materials: The Wooden Writing Boards*

Hittite cuneiform texts refer relatively often to wooden documents and to scribes-on-wood. These wooden documents have not survived due to their perishable nature.<sup>15</sup> Though there is quite some debate about which script was used on these wooden documents, cuneiform or hieroglyphs, the existence of wooden documents as such is not doubted.<sup>16</sup>

11 It would be very interesting to compare the direct sealing practices on leather in Anatolia and the Aegean, but this falls outside the scope of this paper.

12 The Südburg inscription was long held to be from the time of the last Hittite king Šuppiluliuma II, but it now seems likely that it in fact dates to the reign of Šuppiluliuma I (Oreshko 2016).

13 See Van den Hout 2011: 68 with references. To the inscriptions on metal we may now add the silver signet ring belonging to a woman found in 2014 in Ortaköy (Süel 2017: 67, 69). For the damaged lead strip, see Akdoğan—Hawkins 2010: 2, 14–16. For the use of signs resembling Anatolian Hieroglyphs as pot marks, see Waal 2017.

14 For these lead strips, see Hawkins 2000: 533–559 and Akdoğan—Hawkins 2010 and Weeden 2013.

15 An exception is the Ulu Burun writing board, see below § 6.5 and the appendix of Martien Dillo.

16 For the view that these lost wooden tablets were inscribed with cuneiform, see e.g. Singer 1983: 40–41; Symington 1991: 115–116; van den Hout 2010: 257–258, for the view that the

The wooden scribes and their documents are mentioned in administrative, juridical and religious contexts (Symington 1991; Waal 2011). It has been suggested that the missing wooden tablets included daily administrative and economic records and private texts, which are so conspicuously absent in the Hittite records (e.g. Güterbock 1939: 36; Bossert 1958; Uchitel 1988; Dinçol—Dinçol 2002: 210; Waal 2011). There are references to wooden tablets being sealed (Güterbock 1939: 26–36; Herbordt 2005: 25–26). As mentioned above, it has been proposed that some of the clay bullae found in Hattuša were originally attached to wooden writing boards, but it cannot be excluded that they had a different function altogether.

## 4 Writing in the Aegean

### 4.1 *Cretan Hieroglyphs and Linear A*

In the second millennium BCE, at least three writing systems were in use in the Aegean: Cretan Hieroglyphs, Linear A and Linear B, of which only the latter has been deciphered. The Cretan Hieroglyphs have been attested on various sites at Crete, such as Knossos, Malia and Petras. They first appear around the end of the third millennium on seals and seal impressions. Apart from sealings, clay documents in Cretan Hieroglyphs have been found, the first ones dating to around 1800 BCE, the last ones to ca. 1500 BCE.<sup>17</sup>

Linear A documents make their first appearance around the 18th century BCE and the last documents date to ca. 1450 BCE.<sup>18</sup> They have been found on the Greek mainland and several of the Aegean islands. Since both Linear A and Cretan Hieroglyphs are undeciphered it is hard to establish their precise function and internal relationship. The archeological records show that they existed side-by-side and their coexistence seems to have resulted in the exchange of certain scribal features (recently Petrakis 2017: 80–90).

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scribes-on-wood wrote in hieroglyphs, see e.g. Güterbock 1939; Bossert 1958; Dinçol—Dinçol 2002: 210; Waal 2011. Note that recently new evidence has come to light to support this latter view (Waal 2019b).

17 The Cretan Hieroglyphs have been connected to the so-called Archanes script dating from around 2000 BCE, which show signs that are similar to those found in Cretan Hieroglyphs, but this relationship is uncertain. For an elaborate discussion of the Archanes script, see now Decorte 2018. Further, we may mention the script of the Phaistos disc, which represents yet another writing system.

18 For a more elaborate overview of the Linear A sources, see, e.g. Bennet 2008 and Tomas 2010a.

There are some 1500 Linear A inscriptions, which are overall quite short and mainly belong to the palace administration. They appear on unsealed clay tablets and mostly on sealings (nodules and roundels). As the script is not deciphered, our knowledge about these texts is limited. However, from what we can tell they concern registrations of incoming and outgoing deliveries of grain, oil, wine, olives and figs etc. Some 7.5% of the inscriptions can be considered as 'non-administrative', including votive inscriptions on cups and vessels and incidental inscriptions on luxury items such as a silver pin and a golden ring (Bennet 2008: 8).

#### 4.2 *Linear B*

The oldest texts in Linear B stem from around 1450 BCE, but it cannot be excluded that the script was already in use before that time.<sup>19</sup> Though the exact relations may be unclear, Linear B script is undoubtedly a modified form of Linear A. It was used for the Mycenaean language, an ancient form of Greek. Linear B is attested till the end of the Mycenaean period around 1200 BCE and the entire corpus presently consists of about ca. 6.000 clay records. These are mostly small, narrow 'palm-leaf shaped' tablets, recording economic and administrative activities. A second type of tablets includes larger, page-shaped tablets, which compile and summarize information which was in all likelihood first attested on several smaller leaf-shaped tablets.<sup>20</sup> In addition, Linear B has been attested on clay nodules and labels.

The Linear B documents have been found in palatial centers in mainland Greece and the Aegean islands.<sup>21</sup> On each site the tablets, which are not dated, appear to cover administrative periods of a year at most (Bennet 2001: 29; Palaima 2003: 153, 172).

The texts on the tablets are exclusively administrative: there are no literary, historical or religious documents, nor letters, lexical lists or school texts. Likewise, no official sealed documents, such as sale contracts, documents of ownership, loans etc. have thus far been discovered. The tablets are very uniform with respect to their diplomatic features (format, size, layout), paleography, language, vocabulary and scribal conventions (Palaima 2003: 159–162).

19 For a more elaborate overview of the Linear B sources, see, e.g. Uchitel 1988; Palaima 2003, 2010.

20 This does not necessarily mean that all palm-leaf shaped tablets were to be incorporated in such later compilations, some may represent 'final' records (Bennet 2001: 27–30).

21 An exception is the tablet fragment discovered at Iklaina which was found outside palatial context.

Apart from the clay records, there are ca. 160 (very short) painted inscriptions on transport stirrup jars,<sup>22</sup> some nine inscriptions on other pottery (Palaima 1987: 502; Pliatsika 2015: 608–669 with references), incidental inscriptions on stone (Bennet 2008: 17; Palaima 2010: 358; Perna 2011: 17), and a possible painted sign on a fresco at Knossos (Palaima 1981).<sup>23</sup>

#### 4.3 *Writing on Perishable Materials*

With respect to Linear A, there seems to be a general consensus that the use of writing was not restricted to clay, but that documents of perishable nature also existed. The main reason for this assumption is the discovery of so-called flat-based nodules with traces of leather or parchment, which can only have been attached to folded documents (see, e.g., Weingarten 1983; Kryszkowska 2005: 155–157; Hallager 2000: 135–145; Perna 2017: 72–76). Several proposals have been made with respect to the size and content of these documents. According to some, they may have quite sizeable (Hallager 2000: 138–140, Perna 2011: 10, 2017: 74) whereas others give a more modest estimate (Kryszkowska 2005: 156). Secondly, Linear A has been attested on other materials, such as metal and stone in non-administrative contexts. It is thus generally agreed that this script was more widespread and used for other than economic purposes.

When it comes to Linear B, however, there is considerably less agreement. Some scholars assume that writing on perishable material must have existed (e.g. Driessen 2000: 186–187; Palaima 2003: 171–172, 2011), but others maintain that this script was restricted to writing on clay (e.g. Bennet 2001: 27–28; Perna 2011: 18–19; Steele 2017: 154 with n. 5). The fact that writing on perishable materials is less accepted for Linear B is mainly due to two reasons. First of all, from the Linear B archives, there are no certain examples of the just mentioned flat-based nodules showing traces of having been attached to leather documents. In the Room of Chariots at Knossos a handful of sealings have been found that have been classified as such flat-based nodules. They were used to seal narrow pieces of leather, but they are very different from the Linear A examples and their precise function is unclear (Kryszkowska 2005: 217–218). Secondly, compared to Linear A, Linear B has less frequently been attested

22 The meaning of the signs on these stirrup jars is unclear, but they are usually related to the palace administration (Palaima 2003: 167–169). For a full discussion of their possible function(s), see Judson 2013.

23 The two inscribed amber objects found all the way up in Bernstorf, Bavaria (Janko 2015) are probably fakes, see Meller 2017 (ed.).

outside of palatial administrative contexts. These observations have led to the assumption that the use of Linear B was more restricted than that of Linear A.

The differences between the Linear A and Linear B material are certainly of interest and demand an explanation. However, it may be premature to conclude that they mean that the Linear B writing was more limited, as other explanations are possible. As has often been pointed out, there are substantial differences between the Linear A and Linear B administrative procedures. An obvious change was the switch to the Mycenaean language. This was, however, not the only adjustment. There are also significant changes in document formats. A new tablet form, the leaf-shaped tablet was introduced, and other formats were abandoned or used in a different manner (Tomas 2017: 65–67). There are also notable alterations in the sealing practices. As pointed out by Perna, there is a shift in the ratio between sealings and tablets: in the Linear A archives there are much more sealings than tablets (Perna 2011: 13 comes to a ratio of 7 sealings to 1 tablet for Haghia Triada, see also Perna 2017: 77), whereas this is the other way around for the Mycenaean material (Perna 2011: 13 mentions a ratio of 9 tablets to 1 sealing for Pylos and Knossos).<sup>24</sup> With respect to the tablets' content there are also differences: the Linear B tablets are more complex and organized, containing more detailed information than the Linear A tablets.

In brief, the Linear B corpus shows substantial administrative changes compared to the Linear A corpus, including a shift in sealing practices.<sup>25</sup> However, this does not necessarily mean that all writing on perishable materials disappeared in the Linear B administration (cf. Palaima 2003: 171) and the debate about the potential use of Linear B on other materials than clay is far from settled. A comparison with Hittite Anatolia may be helpful here.

24 At Knossos, ca. 3700 Linear B clay tablets have been found and ca. 400 sealings, at Pylos there are about 1000 tablets and 147 sealings. At Haghia Triada, 147 tablets and 1023 sealings have been excavated (Perna 2011: 13).

25 These changes were not confined to the administrative system only; in the transition period from Linear A to B, there were also changes in the material and burial culture (Bennet 2008: 20). See also Tomas 2010b about the differences in Minoan and Mycenaean religious administration.

TABLE 9.1 Lifespan of Linear B and Hittite cuneiform tablets

Script	Temporary records	Semi-current records	Permanent records	Charters, sealed tablets
Linear B	++	+	–	–
Hittite cuneiform	+	+	++	MH land deeds

## 5 The Hittite and Linear B Text Corpora Compared

### 5.1 *Differences and Similarities*

If we compare the nature of Hittite and Linear B tablet collections, some interesting similarities can be observed:

- Both the Hittite and Linear B tablets belong to the palace administration; no private records have come down to us;
- Both the Hittite and Linear B tablets are very uniform and standardized with respect to scribal habits, formal features, paleography, language and content;
- Both the Hittite and Linear B tablets are not dated;
- Both the Hittite and Linear B tablets are as a rule not sealed; no legalized contracts, wills etc. have survived;<sup>26</sup>
- With respect to sealing practices, both in the Hittite and Linear B archives sealings in the form of hanging nodules or bullae are predominant;
- There are no public inscriptions in Linear B nor in Hittite cuneiform.<sup>27</sup>

However, there are also some remarkable differences:

- The Linear B tablets are mostly small tablets containing only a few lines of texts, whereas the Hittite tablets are overall much larger, containing elaborate compositions;
- The Linear B tablets exclusively deal with economic affairs, whereas the Hittite tablets primarily contain other text genres;
- The Linear B tablets all have a short lifespan, whereas most Hittites texts were kept and copied over centuries.

26 Exceptions from Hattuša include the special group of land deeds from the Middle Hittite period, and some incidental sealed tablets. For Hittite sealing practices, see Güterbock 1939: 26–36, 1980; Herbordt 2005: 25–26; Marazzi 2000: 79–98; Waal 2015: 44–48.

27 In LBA Anatolia there are a few public inscriptions in Anatolian Hieroglyphs, see above 3.2.

## 5.2 *Meeting in the Middle*

If we zoom in on the last point of the previous paragraph, the lifespan of the tablets, the following picture unfolds itself:

As table 9.1 shows, there is an overlap between the Hittite and Linear B texts in case of temporary records and semi-current records. The ratio of these two types of records in the Aegean and Anatolia is, however, more or less reverse: for Linear B, there are predominantly primary temporary records, whereas in the Hittite archives, the semi-current records are more common than temporary records. Their content is also mostly different: The Linear B tablets mainly deal with economic administration including livestock, foodstuff and armor; topics that hardly appear in the Hittite records.<sup>28</sup> By contrast, most of the Hittite temporary and semi-current documents consist of oracle reports, letters and cult inventories. The modest Hittite economic corpus largely deals with inventories of raw materials and luxury items and further includes a small number of lists of cities and people and cadastral records (Van den Hout 2012: 44–46). It is only in this last category, the cadastral records or *Feldertexte*, that there are some remarkable similarities with the Linear B records, as shown by Uchitel (1988).<sup>29</sup>

Most arresting is the complete absence of non-administrative records in the Linear B corpus, which are so abundantly attested in Hittite Anatolia. How are these differences to be explained? Should we conclude that the Mycenaean and Hittite societies were fundamentally different when it came to writing? Were the Myceneans solely interested in minutely recording daily economic transactions, whereas the Hittites did not bother with such trivial affairs, but used writing for all kinds of other purposes instead? And, if we broaden our scope to the rest of the ancient Near East, were the Aegean and Anatolia the only areas in which writing was never used for private purposes?<sup>30</sup> Or should we accept that we are missing documents on both sides that were written on perishable materials?

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28 There are only 2 possible primary records that deal with flour distribution (KBo 32.134) and bread delivery (KBo 18.189). In addition, there a small number of ration lists, which lay down the rules of distribution, but no actual receipts have been found (Van den Hout 2012: 44–45 with references).

29 Note that Uchitel suspects that the Hittite and Linear B documents reflect the same procedures.

30 As pointed out by Palaima 1987: 501 the lack of personal uses of writing in the Late Bronze Age is in sharp contrast with the first attestations of the alphabet in Greece, which are all texts of a private nature.

### 5.3 *Missing Records?*

Considering the fact that the Hittite Empire was highly centralized and organized, it is hard to imagine that it could have functioned without recording the first level of administration.<sup>31</sup> The assumption that this was done on perishable materials is supported by the fact that in a few of the semi-current records explicit reference is made to wooden writing boards (Siegelová 1986: 33, Uchitel 1988). In all likelihood, most primary records were composed on wood, on the basis of which sometimes compilations in clay could be made. With respect to the dearth of sealed documents, textual references are again of help. Though there are no clear examples of direct sealings that were attached to perishable documents, the texts inform us that sealed (wooden) documents did exist. Possibly, they were sealed by means of bullae attached to strings (see 3.2 and 3.3 above), or in a completely different manner altogether.

For the Aegean, there are no comparable references to writing on perishable materials, nor to sealed documents. This is not surprising, since such references are hardly to be expected in the type of records that have come down to us. As the comparison with Hittite Anatolia makes clear, the fact that there is no direct archaeological confirmation of the usage of perishable writing materials for Linear B in the form of impressions of direct sealings, is not a conclusive argument to dismiss their existence altogether.<sup>32</sup> The perishable documents may have been sealed by the hanging nodules, or other methods of (indirect) sealing may have been used.

Secondly, just as in the case of Linear B, the use of Hittite cuneiform in non-archival contexts is extremely scarce: Hittite cuneiform has been attested only on three objects outside the tablet collections during a period of some 500 years, and two of these inscriptions are not in Hittite, but in Akkadian.<sup>33</sup> The use of Linear B outside of archival context, though modest, is much firmer compared to the Hittite evidence. However, as the clay tablets demonstrate, cuneiform writing was already used for a wide range of text genres from the very beginning period of the Hittite Empire. The paucity of Linear B inscriptions outside the palatial administration is therefore also no valid reason to exclude its use for other text types than administrative records.

Lastly, the lack of school exercise texts in both regions is of significance.<sup>34</sup> They are an eloquent warning that our corpus is not complete: the uniformity

31 For a different view, see Van den Hout 2012: 45, 48.

32 As suggested by Hallager 2000: 259 for Linear A, the single-hole nodules may have been attached to written documents, such as legal documents. This could also have applied to Linear B documents.

33 See above 3.1.

34 Note that in *Ḫattuša*, we do have lexical lists, but these were not part of the primary

TABLE 9.2 Linear A, Linear B, Hittite Cuneiform and Anatolian Hieroglyphic inscriptions in non-administrative context

Script	Public inscriptions	Inscriptions on objects in non-administrative context
Linear A	–	+ (ca. 7.5%)
Linear B	–	+ (< 1%) <sup>a</sup>
Hittite cuneiform	–	+ (< 1%)
Anatolian Hieroglyphs	+	+ <sup>b</sup>

a This number would be substantially higher if one were to include the ca. 160 stirrup jar inscriptions whose function is uncertain, see above n. 22.

b The total number of Late Bronze Age Anatolian Hieroglyphic inscriptions is too low to give a representative percentage.

of the scribal conventions both in Hattuša and the Aegean imply a strict and rigid training process and the scribes must have learned to master the script in some way.<sup>35</sup>

To conclude, though it cannot be excluded that both the Aegean and Anatolia were each in their own way exceptional in their restricted use of writing in comparison to each other—and the rest of the Near East with respect to the absence of private (and school) records—there are compelling reasons to consider the possibility that our data are skewed and that perishable materials were used for (some of the) missing documents on both sides. For Hittite Anatolia, textual references confirm this assumption. For the Aegean, indications are less manifest, but certainly not absent.

## 6 Arguments for a Wider Use of Linear B on Perishable Materials

As the previous paragraph has shown, there are no cogent reasons to assume a more restricted use of Linear B than of Linear A. By contrast, there are in fact a number of arguments that plead for a wider use of Linear B on perishable materials:

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scribal education, but rather very learned scholarly texts (Weeden 2011: 130; Scheucher 2012: 345–346; Veldhuis 2014: 278–279). The typical lentil-shaped exercise tablets known from Mesopotamia have not been found in Hittite Anatolia.

35 With respect to Linear B, the fact some topics, such as pottery production do not appear in the surviving records could also be seen as an indication that our records are far from complete, though other explanations for this absence are possible as well.

### 6.1 *The 'Palm-leaf' Tablet*

The most common type of Linear B tablets has been dubbed 'palm-leaf tablets' as its shape is reminiscent of palm leaves. The choice for this tablet shape is significant. The material clay hardly imposes any restrictions to the size or the format of a document and it can in principle be shaped into any desired form. An obvious reason why the clay was kneaded in this shape would be that it was imitating an already existing type of document, namely palm leaves (see, e.g., Evans 1921: 638; Myres (in Evans 1952): 2; Diringner 1953: 42; Ahl 1967: 188). The choice for palm leaves as a primary writing material would be a natural and logical one. It is easy to use, widely available (especially on Crete) and resistant, which is why it has been, and still is, a very popular writing material in many regions of the world (see, e.g. Diringner 1953: 37–44; Padmakumar et al. 2003). In many languages, the use of leaves for writing is still reflected in today's terminology for script bearers (e.g. folia, Blatt, leaf, hoja, feuille).<sup>36</sup> When the scribes who were accustomed to writing on palm leaves started to write on clay, they stuck to the same scribal conventions, including the shape of the documents.<sup>37</sup> This scenario finds support in the fact that in classical antiquity it was commonly held that palm leaves were the first writing material in the Aegean (see below § 7.1). Needless to say, the perishable materials used for writing were not necessarily restricted to palm leaves, possibly they also made use of other ephemeral materials, such as leather, parchment or wood.

### 6.2 *The Characteristics of the Script*

As has often been pointed out (e.g. Evans 1921: 638; Palaima 2003: 171) the written forms of the Linear B characters are cursive and complex and better suited to be written with pen and brush than to be incised in the coarse material clay.<sup>38</sup> It is telling that the sign forms are retained over time without any simplification or abstraction, which would have made writing in clay much easier. We do very clearly see such developments in the cuneiform script which was written almost exclusively on clay.<sup>39</sup>

36 For a different view, see Weingarten 1983: 9 n. 9.

37 For the reason why this shift may have occurred, see below § 8.

38 Alternatively, no ink was used, but the soft palm leaves were incised with a stylus. As examples from South Asia show, this technique is also very suitable for round letter shapes, see Padmakumar et al. 2003: 128.

39 Note that Driessen (2000: 186–187) has argued that the external and internal features of the script betray elements that make it more than just a bookkeeping script, thus also implying a wider use of the script.

### 6.3 *The Number of Scribes*

Though the Linear B corpus is relatively limited, a substantial number of scribal hands have been identified. If the identifications of the scribal hands are correct, this would first of all mean that a sizeable group of individuals within the palace administration were able to write.<sup>40</sup> Bennet (2001: 29) mentions an average of 32 tablets per scribe at Pylos; 50 at the Room of the Chariot tablets and 55 in the main archive of Knossos. This leads him to conclude that these scribes were in fact administrators at the highest level, presumably members of the elite, who spent much of their time supervising activities (Bennet 2001: 31–35).<sup>41</sup> This scenario is certainly possible, but not without problems, as pointed out by Palaima (2003: 176–177). As he observes with respect to Pylos, the scribes wrote about widely diverse subjects without any clear patterns of specialization that would point to them being responsible for certain parts or aspects of the economic management. In addition to the objections raised by Palaima, one has to wonder if the elite members would have been interested in recording such detailed accounts; in contemporary Mesopotamia, for instance, this kind of bookkeeping activities were hardly considered as prestigious high-status tasks.<sup>42</sup>

A simpler explanation for the awkward ratio of the relatively high number of individuals involved in writing to the relatively few and short records would be that writing was used on a much larger scale on perishable materials and that literacy was not necessarily confined to the elite.

### 6.4 *The Uniformity of the Script*

Though there are quite a number of scribes responsible for the tablets that have come down to us, the overall uniformity and standardization of the script and the scribal habits is striking, both on the mainland and the islands.<sup>43</sup> This implies not only a centralized control (see above § 2), but also a very rigid training. It is questionable that such an elaborate educational system would have been used and maintained so consistently only for the detailed recording of a limited part of the administration.<sup>44</sup>

<sup>40</sup> On the identification of scribal hands, see Palaima 2011: 96–100 with references.

<sup>41</sup> Compare also Driessen 1992: 198–200 who argues that tablet-writers were part of an administrative class who could also be members of other elite groups.

<sup>42</sup> The inscriptions on the stirrup jars have also been seen as indications that writing was more widespread (Ventris—Chadwick 1973: 109–110; Wace 1953: 426), but since their function is uncertain, they are best left out of consideration.

<sup>43</sup> Needless to say, there are certainly regional differences and variations. However, these are only to be expected as we are dealing with individual people, not machines, and they do not affect the overall very homogenous picture.

<sup>44</sup> The fact that the Hittite cuneiform script is also very uniform, yet used for a wide variety

### 6.5 *Archaeological Evidence*

When discussing the possible existence of perishable writing materials, archaeological evidence is bound to be absent or limited. The well-known wooden diptych from the Ulu-Burun shipwreck is one of the few surviving wooden objects from the Late Bronze Age. Its provenance is unknown, but it may have belonged to one of the Mycenaean officials who were on board on the ship.<sup>45</sup> A confirmation that this tiny wooden diptych may indeed be Mycenaean has now been suggested by Martien Dillo. He proposes that the signs incised on the edge of the tablets have to be read as Mycenaean numerals (see the appendix of Dillo below).

Further indications for the use of such wooden diptychs in the Mycenaean period are the bronze hinges that were found at the Archive Complex at Pylos and in the arsenal at Knossos. Shear (1998) has suggested that these may be hinges of wooden tablets, similar to the one found in Ulu Burun.<sup>46</sup> Lastly, we may here recall the flat-based nodules from Knossos which may have been attached to leather documents (see above § 4.3).

### 6.6 *Correspondence with Hittite Anatolia: Aḫḫiyawa Letters*

As discussed in § 2, excavations in Ḫattuša have yielded correspondence between the Hittite king and the king of Aḫḫiyawa. The preserved documents, including a letter that was sent by the Aḫḫiyawan king to the Hittite king, are written in Hittite, by a native speaker and in a typical Hittite *ductus*. This is by no means exceptional: some of the Egyptian-Hittite correspondence unearthed in Ḫattuša is not written in Akkadian, which was the Late Bronze Age *lingua franca* of the ancient Near East, but in Hittite.<sup>47</sup> Various explanations for this have been offered: the letters could be drafts or translations and/or archival copies, or the correspondence was at times conducted in Hittite.

The possible modes in which contacts between the Hittite king and the king of Aḫḫiyawa took place has already been discussed elsewhere and I will therefore not address this issue in detail (Melchert 2020, Beckman et al. 2011: 138–139; Hoffner 2009: 299; Surenhagen 2008: 260–265; Bryce 2003: 199–200). Theoretically, many scenarios are possible. If one does not want to accept that in the Aegean during this time period writing was used for any other purpose than

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of text genres makes the argument of Dow 1954: 122 that the uniformity and conservatism of the script is an indication that its use must have been restricted invalid.

45 For Aegean presence on the ship, see Pulak 2005; Bachhuber 2006: 352–356.

46 For a different view, see Perna 2011: 15.

47 On the mechanics of the communication between the Great Kings of the ancient Near East, see Bryce 2003: Chapter 3, esp. pp. 54–56.

economic administration, one could argue that the messages from Ahḫiyawa were transmitted orally, and that they were only written down on the Hittite side. Though possible, this would be highly exceptional in light of the wider Near East, where letters were the basic tools for the maintenance of diplomatic relations (Bryce 2003: 48). Not only the Great Kings, but also vassal kings of smaller states made use of writing for their correspondence. Considering the fact that Ahḫiyawa was not only in contact with Anatolia, but also with Egypt (see, e.g. Cline 1994; De Fidio 2008: 96–97), it would seem only logical and practical that in the Aegean writing was used for such long-distance communication, just like the partners with whom they corresponded.<sup>48</sup>

All in all, there are quite a number of facts that suggest that the now available corpus of Linear B texts does not offer us the full picture and that many more documents were produced that are now lost. It is inevitable that the evidence presented here is only indirect; more direct proof of perishable writing materials cannot realistically be expected.

## 7 Later Traditions about Ancient Writing Materials

Further to the arguments above, it is of interest that in later classical traditions it was generally believed that the first writing materials before the invention of papyrus, were on perishable materials such as palm leaves and wood.<sup>49</sup> Though these sources should be treated with caution as they stem from a much later date, they offer a welcome additional perspective to the debate.

### 7.1 *In Palmarum Foliis Primo Scriptitatum*

Pliny (23–79 CE), citing Varro, relates that the use of papyrus for writing was invented in Alexandria. Before that time, people first wrote on palm leaves, then on the bark of certain trees, subsequently they used sheets of lead for official documents, and for private documents linen sheets or wax tablets.

(Varro informs us that paper owes its discovery to the victorious career of Alexander the Great, at the time when Alexandria in Egypt was founded by him;)

48 It is interesting that in the so-called Millawanda letter explicitly mention is made of *wooden* documents made for the king of Wiluša (Beckman e.a. 2011: 128–129). The use of wooden documents would explain the conspicuous absence of any written sources in western Anatolia during the Late Bronze Age.

49 See already Evans 1909: 105–106 and Ventris—Chadwick 1973: 109.

*antea non fuisse chartarum usum: in palmarum foliis primo scriptitatum, dein quarundam arborum libris. Postea publica monumenta plumbeis voluminibus, mox et privata linteis confici coepta aut ceris; pugillarium enim usum fuisse etiam ante troiana tempora invenimus apud Homerum*  
*Naturalis Historia* 13.21<sup>50</sup>

before which period paper had not been used, the leaves of the palm having been employed for writing at an early period, and after that the bark of certain trees. In succeeding ages, public documents were inscribed on sheets of lead, while private memoranda were impressed upon linen cloths, or else engraved on tablets of wax; indeed, we find it stated in Homer, that tablets were employed for this purpose even before the time of the Trojan war.<sup>51</sup>

The information given by Pliny is in line with information found in the *Suda*, a Byzantine encyclopedic work from the 10th century CE. Among the various explanations of the meaning of *grammata phoinekeia*, we find the following observation:

Φοινικήϊα γράμματα· Λυδοὶ καὶ Ἴωνες τὰ γράμματα ἀπὸ Φοίνικος τοῦ Ἀγήνορος τοῦ εὐρόντος· τούτοις δὲ ἀντιλέγουσι Κρήτες, ὡς εὐρέθη ἀπὸ τοῦ γράφειν ἐν φοινίκων πετάλοις  
*Suda* φ 787

Phoenician letters: Lydians and Ionians [call] the letters [thus] from their inventor Phoinix the son of Agenor; but Cretans disagree with them, [saying that] the name was derived from writing on palm leaves.<sup>52</sup>

The Greek word φοῖνιξ can have several meanings: it may, among other, refer to a palm tree, the color purple or crimson, or 'Phoenician' (Liddell—Scott 1940 s.v. φοῖνιξ). In combination with *grammata* it is usually taken to refer to the Phoenician letters, by which the alphabet is meant. Here, an alternative explanation is given, in which the *grammata phoinekeia* refer to writing on palm leaves.<sup>53</sup>

50 For an online text edition, see Mayhoff 1906, see <http://data.perseus.org/citations/urn:cts:latinLit:phi0978.phi001.perseus-lat:13.18>.

51 Translation: Bostock—Riley 1855, available online at <http://data.perseus.org/citations/urn:cts:latinLit:phi0978.phi001.perseus-eng:13.21>.

52 For text edition, see *Suda On Line* and the *Stoa Consortium* 2000–2018 (<http://www.stoa.org/sol/>).

53 If this interpretation is correct, it would mean that the expression *grammata phoinekeia*

### 7.2 *Lead and Linen*

On another occasion, Pliny tells about a letter of Sarpedon that the Roman consul Mucianus had seen in a Lycian temple, of which he questions the authenticity:

praeterea Mucianus ter cos. prodidit nuper se legisse, cum praesideret Lyciae, Sarpedonis ab Troia scriptam in quodam templo epistulae char- tam, quod eo magis miror si etiamnum Homero condente Aegyptus non erat: aut cur, si iam hic erat usus, in plumbeis linteisque voluminibus scriptiatum constet, curve Homerus in ipsa illa Lycia Bellerophonti codicillos datos, non epistulas, tradiderit?

*Naturalis Historia* 13.27<sup>54</sup>

In addition to these facts, Mucianus, who was three times consul, has stated that he had recently read, while governor of Lycia, a letter written upon paper, and preserved in a certain temple there, which had been written from Troy, by Sarpedon; a thing that surprises me the more, if it really was the fact that even in the time of Homer the country that we call Egypt was not in existence. And why too, if paper was then in use, was it the custom, as it is very well known it was, to write upon leaden tablets and linen cloths? Why, too, has Homer stated that in Lycia tablets were given to Bellerophon to carry, and not a paper letter?<sup>55</sup>

For Pliny, it is a well-established fact that in the old days people wrote on different writing materials (lead and linen cloth) and he regards the use of papyrus as an obvious anachronism, casting doubt on the genuineness of the document (cf. Higbie 2014: 15).

### 7.3 *Bark and Bronze*

Writing on bark is mentioned in relation to the diary of Dictys, the companion of Idomeneus in the Cretan contingent at Troy. This diary has survived with two introductions. One of them relates that the journal was discovered when the tomb of Dictys at Knossos collapsed:

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was later (incorrectly) re-interpreted as referring to the Phoenicians, who were seen as the bringers of the alphabet to Greece (e.g. Herodotus, *Histories* 5.58). This also has potentially interesting implications for the origins of the alphabet, see Waal forthc.

54 For an online text edition, see Mayhoff 1906, see <http://data.perseus.org/citations/urn:cts:latinLit:phi0978.phi001.perseus-lat1:13.24>.

55 Translation: Bostock—Riley 1855–1857, available online at <http://data.perseus.org/citations/urn:cts:latinLit:phi0978.phi001.perseus-eng1:13.27>.

pastores cum eo devenissent, forte inter ceteram ruinam loculum stagno affabre clausum offendere ac thesaurum rait mox dissolvunt non aurum nec aliud quicquam praedae, se libros ex philyra in lucem prodituri.

Shepherds who arrived there [at the grave- W.W.], by chance came upon a tin box among the other rubble. So thinking it was treasure they presently opened it. But what came to light was not gold or anything profitable, but books of linden bark.<sup>56</sup>

Though the story about this miraculous rediscovery is in all likelihood fabricated, one should not completely discard it as mere fiction. The main aim of this account is to lend credibility to a supposedly ancient diary dating to the time before Homer. In order to achieve this, the physical details of the document and its unearthing must have sounded credible to the audience.<sup>57</sup> It is therefore quite possible that the report was inspired by genuine discoveries of ancient documents (Evans 1909: 108; Astour *apud* Owen—Young 1997: 33). As pointed out by Ahl 1967: 189, referring to the observation of Evans that Cretan women wore Linear B tablets as charms, it is more than likely that during the Classical period ancient inscriptions were found. Like palm leaves, bark was a commonly used writing material in other regions, and examples hereof have sometimes survived in more favorable environmental conditions.<sup>58</sup>

A reference to the discovery of an ancient document made of bronze is found in the *Moralia* of Plutarch (46–120 CE). When the alleged tomb of Alcme-  
ne, the mother of Heracles, was opened, a bronze tablet with a long inscription in an unknown script was revealed. In the following passage, Phidolaus relates about the opening of the grave:

(There were found no relics of a body; but a small brazen bracelet, and two earthen pipkins full of earth, which now by length of time was grown very hard and petrified)

[ἐπάνω δὲ] τοῦ μνήματος [ἔκειτο] πίναξ χαλκοῦς <sup>7</sup> ἔχων γράμματα πολλὰ θαυμαστά <sup>8</sup> ὡς παμπάλαια γινῶναι γὰρ ἐξ αὐτῶν <sup>9</sup> οὐδὲν <sup>10</sup> παρέιχε καίπερ ἔκφα-

56 Translation: Dowden 2016 (Brill's New Jacoby 49).

57 For the construction of the elaborate 'Beglaubigungsapparat' for this text, see Stott 2008: 93 with references.

58 The oldest known birch bark manuscripts are the Gandharan Buddhist texts from Afghanistan, dating to the 1st century CE (Salomon et al. 1999). For the use of bark for more mundane text genres, see the medieval birch bark documents from Novgorod (Schaecken 2012). Evidence for the use of wood as a writing material in the Roman period, is presented by the Vindolanda tablets (1st–2nd c. CE).

νέντα τοῦ χαλκοῦ καταπλυθέντος τος, ἀλλ' ἰδίος τις ὁ τύπος καὶ βαρβαρικός τῶν  
 χαρακτήρων ἐμφερέστατος Αἰγυπτίους διὸ καὶ Ἀγησίλαος, ὡς ἔφασαν, ἐξέπεμ-  
 ψεν ἀντίγραφα <sup>11</sup> τῷ βασιλεῖ δεόμενος δεῖξαι τοῖς ἱερεῦσιν, εἰ ξυνήσουσιν

PLUTARCH, *De Genio Socratis* section 5<sup>59</sup>

Upon the monument there was a brazen plate full of strange, because very ancient, letters; for though, when the plate was washed, all the strokes were very easily perceived, yet nobody could make anything of them; for they were a particular, barbarous, and most like the Egyptian character. And therefore Agesilaus, as the story goes, sent a transcript of them to the king of Egypt, desiring him to show them to the priests, and if they understood them, to send him the meaning and interpretation.<sup>60</sup>

Since the tablet contains mysterious signs that look like Egyptian hieroglyphs it is sent to Egypt, where it is 'translated'. It has been suggested that these signs refer to Linear B (see e.g. Astour *apud* Owen—Young 1997: 33; Larson 1995: 92; Evans 1909: 107–108), but this remains impossible to prove. One may further mention the bronze tablets of Acusilaus of Argos (FGH 2 T1, see Jeffery 1967: 159 n. 27; Higbie 1999: 55). The *Suda* describes Acusilaus as a very ancient historian, who wrote genealogies from bronze tablets that were reportedly found by his father when he was digging a place in his house.<sup>61</sup>

As already mentioned, the above accounts date to a much later period, which affects their trustworthiness and the information they provide should not be taken at face value. However, the fact that in classical antiquity the idea that the earliest form of writing was on perishable materials such as palm leaves was apparently widely accepted common knowledge is significant and should not be ignored either.

## 8 Accidental Survivors?

The evidence for the use of the main writing materials in Late Bronze Age Anatolia and the Aegean may be summarized as follows:

59 For an online text edition, see Bernardakis 1891, see <http://data.perseus.org/citations/urn:cts:greekLit:tlg0007.tlg109.perseus-grc1:5>.

60 Translation based on Goodwin 1874, available online at <http://data.perseus.org/citations/urn:cts:greekLit:tlg0007.tlg109.perseus-eng1:5>.

61 S.v. Ἀκουσίλαος (Adler α 942), see the *Suda* online (<http://www.stoa.org/sol/>).

TABLE 9.3 Main writing materials in the Aegean and Anatolia in the Late Bronze Age

Writing materials	Anatolia		Aegean	
	Anatolian hieroglyphs	Cuneiform	Linear B	Linear A
Clay	– <sup>a</sup>	++	++	++
Metal	+	+	– <sup>b</sup>	+
Wood, bark, leaves	<i>References in cuneiform texts to wooden documents and scribes on wood</i>		<i>The Uluburun diptych?<sup>2</sup> References to these writing materials in later classical texts</i>	
Leather, parchment	–	–	<i>Impressions of leather on direct sealings<sup>2</sup></i>	<i>Impressions of leather on direct sealings</i>
Stone	<i>From ca. 1350/1300 BCE onwards</i>	–	+	+

a Exceptions are a few incidental signs on clay tablets, see Waal 2017.

b There are later references to lead and bronze as early writing materials in the Aegean, but it is unclear to what script they refer (see above 7.2 and 7.3).

As is to be expected, the evidence for the use of perishable writing materials is in all cases indirect since—except for the Uluburun diptych whose provenance is uncertain—none of the actual documents have survived. If we accept that Linear B, just like it is usually assumed for Linear A, was predominantly written on perishable materials, and that the leaf-shaped tablets mimicked palm-leaves, several important questions immediately come to mind: Why were the documents that did survive written on clay instead of on palm leaves? Do they testify to a definite switch from palm leaves to clay or did palm leaves continue to be used alongside the clay tablets? And what kind of texts were written on these palm leaves and/or other perishable materials? To start with the second question, since the script does not change in the way we would expect it to if it were solely used for writing in wet clay, it seems likely that writing on palm leaves continued (Ahl 1967: 188). Also, the fact that only a relatively

limited corpus of clay tablets has survived would plead for the continual use of perishable materials, though this could also be due to archaeological chance and/or the recycling of tablets after they were no longer relevant.<sup>62</sup> Yet another possibility is that clay did replace the palm leaves, but writing on other perishable materials such as skin and leather continued. It is of interest that later traditions do not mention clay as an ancient writing material (see above § 7), which may be seen as a confirmation that the use of this material was exceptional and not common practice.

The first question, why the texts that have survived were written on clay is even harder to answer. The suggestion of Ventris and Chadwick (1973: 109) that the use of clay for storeroom inventories was probably a protection against mice is charming, but impossible to prove. It is, however, very well possible that there were some very practical, mundane reasons behind this choice, which can unfortunately no longer be traced. This is not a unique situation, it also remains a mystery for instance why the few surviving economic texts and letters in Anatolian Hieroglyphs from the first millennium were written down on lead (and have as a consequence survived).

As for the question what kind of texts were written on other materials than clay, one may speculate that they included the kind of documents present in the state archives of Anatolia—such as religious texts, literary texts and (international) correspondence—and/or private records, but this remains unavoidably tentative.

This article has put forward a number of arguments for a wider and more extensive use of Linear B than solely for economic administration on clay. Part of the argument has been based on a comparison with Anatolia, and the rest of the ancient Near East. Of course, one needs to be careful to extrapolate too easily from parallels from contemporary neighboring societies (cf. Van den Hout 2012: 48). The fact that these regions were in close contact does not automatically mean that they were all the same; it is clear that differences existed, which already becomes apparent from the various distinct writing systems that were, and continued to be, in use. By the same token, however, one should also be wary to regard the Aegean as exceptional too readily and to continue to study this region in isolation.

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62 Note that the rule 'No fire, no tablets' (Palaima 2010: 358) does not always hold true, as is shown by examples of surviving unbaked clay tablets from Anatolia and Mesopotamia. See also Evans 1909: 43 and Myres (in Evans 1952): 3 about the discovery of unbaked tablets from Crete.

### Addendum by Martien Dillo

#### Do the Uluburun signs represent Mycenaean numerals?

One of the most spectacular finds in the shipwreck at Uluburun was a wooden writing set or folding tablet (diptych) dating to ca. 1300 BCE, which was discovered in 1986. The diptych contains a number of incised marks, which could not immediately be identified. In his edition and discussion of the wooden tablet Robert Payton (1991) identified the upper mark of three signs on the lower end of the inner border of the right-hand board as an 'O', but he could not decide whether or not this mark, as well the other two marks further down below were a form of script. Above the three marks there is a blank area, then the beginnings of another mark are visible, which is very difficult to see. Payton interpreted this sign as an 'O' as well, and suggests that perhaps more marks were originally present, that are now eroded or missing (see fig. 9.1). As for the function of these markings, he remarked that apart from some form of script they could represent owner's marks, a form of decoration, or that they could have been made for an unknown purpose (Payton 1991: 104).

A similar sobering conclusion was proposed by the Nestor of Linear B epigraphy, Emmett L. Bennett, Jr. after investigating the tablet. He did not recognize the signs as characters in any writing system known to him, as he mentions in his letter (March, 1989) to Barry B. Powell, who was at that time preparing a study on the origin of the Greek alphabet. Bennett concludes: "it would be wiser not to claim that the diptych itself is inscribed" (Bennett *apud* Powell 1991, paperback ed. 1996: 66–67, note 185). This opinion has not much changed since, and the signs have therefore not received much attention. An exception is Neumann (1999: 413) who has proposed that the signs most below represent a diptych and the two signs above may represent a personal name ('diptych of X').

When I studied the signs in 1991, trained in Linear B by the lectures and *privatissima* given by Prof. C.J. Ruijgh at the University of Amsterdam (cf. Ruijgh 1967), the idea came to me that the marks could be interpreted as Mycenaean signs representing numbers. When I recently discussed the Uluburun markings with Willemijn Waal, I realized that this interpretation has not yet been put forward and I am therefore happy to set out—on her kind invitation—my arguments below.

The Linear B numeral system is expressed by means of a decimal notation, identical with that of early Minoan in Linear A. Single units are indicated by vertical strokes and the signs for tens by horizontal lines, while the hundreds and thousands are indicated by simple circles and by circles with spokes

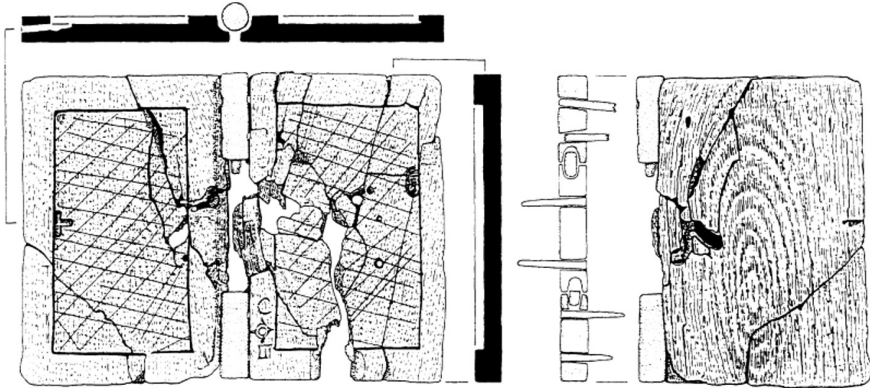


FIGURE 9.1 The Uluburun writing-board set (diptych) with marks inside

DRAWING BY NETIA PIERCY, PUBLISHED IN PAYTON 1991: 102 (FIG. 2).

REPRODUCED WITH THE PERMISSION OF THE BRITISH INSTITUTE AT ANKARA

respectively. The sign for 10,000, which is not attested in Linear A, is expressed in Linear B by means of a ligature of the sign for 1000 with a horizontal line (10) written within (cf. Evans 1909: 256; Ventris & Chadwick 1956: 53; Heubeck 1966: 24; Ruijgh 1967: 32), see fig. 9.2.

In my opinion the marks inside the Uluburun diptych have a structure that is very similar to the Mycenaean signs representing numbers. Though they are ‘not in the best condition’ (Bennett *apud* Powell 1991; 1996: 67), the upper mark was already identified as ‘O’ by Payton, as mentioned above. This ‘mark’ can then easily be understood as the Linear B sign for ‘100’. The lowest mark is given by Payton in his reconstruction as three vertical lines between two horizontals. This could be read as the sign for ‘3’ in a separate framework. Judging from the photo published in Aruz et al. 2008 (p. 368, fig. of cat. no. 234), however, the lower horizontal line appears to be absent. In this case, we might be dealing with the number ‘3’ written below the number ‘10’.

Parallel to the upper sign for ‘100’ is the second sign, which is a circle with spokes, just like we see in the Linear B signs for ‘1000’. However, here we do not find the horizontal stroke (10) written inside (which would represent 10,000), but a circle (100). In analogy to the way the sign for 10,000 is formed (the sign 1000 with the sign 10 within) this sign could represent the amount 100,000 (the sign 1000 with the sign 100 within), which has so far not been attested, see fig. 9.3.

If these observations are correct, we may conclude that the tablet’s owner was a (chief) merchant, most likely from Mycenaean Crete or mainland Greece. He may have had more tablets in his possession, since a fragment of another

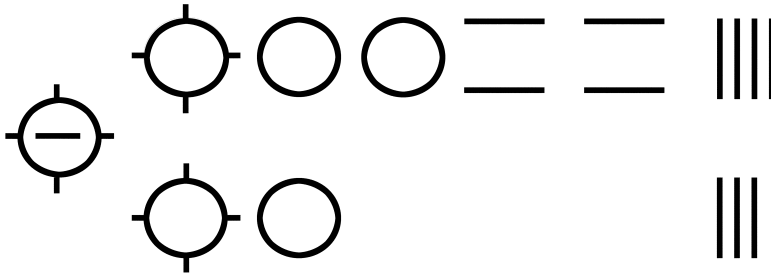


FIGURE 9.2 The number 12,347 in Linear B  
 AFTER HEUBECK 1966: 24; FOR A COMPARABLE EXAMPLE  
 ('12,345') SEE VENTRIS AND CHADWICK 1956: 53

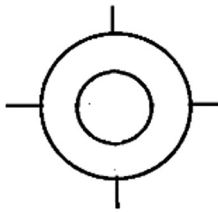


FIGURE 9.3  
 Proposed sign for '100,000' (1000 with 100 inside), to be add to the  
 Aegean numerals (attested in the Uluburun diptych)  
 DRAWING: MARTIEN DILLO

wooden writing-board was found in the shipwreck (Pulak 2008: 367 with n. 6). The folding tablet with the markings may then have been his 'third' diptych, which was indicated with the signs most below. Possibly, he used the diptych to notate elements of the cargo which were numbered in greater amounts, but sold per unit. The numeral '100,000' may sound a bit exorbitant in this context, but it may, for instance, have referred to the total amounts of beads, thousands of which were actually found still aboard the vessel. The content of the writing-board set may have been a list comparable to the lists found on the Mycenaean rectangular page-shaped tablets, enumerating the different owners and their share in the merchandise. The scribe may have initially forgotten to include the numbers and therefore used the wooden frame to note down the numbers on the left side. However, other interpretations should certainly not be excluded.<sup>63</sup>

Since the signs of the diptych are not in perfect condition and I have not been able to examine the original, this suggestion has to remain tentative. If proven correct, however, this would have some interesting historical implications. It would confirm Mycenaean presence on board of the Uluburun ship

63 A different function is proposed by Kelder 2016, who points out that the luxurious materials of which the diptych is made (fine buxus wood with ivory hinges) would suggest that it had a more official function and may have served as a diplomatic passport.

(Pulak 2005; Bachhuber 2006), and it would be an indication that Linear B was not only written on clay, but also on wood, and that it was used outside the palatial administration.

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